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Multi-platform operational validation of the Western Mediterranean SOCIB forecasting system

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The development of science-based ocean forecasting systems at global, regional, and local scales can support a better management of the marine environment (maritime security, environmental and resources protection, maritime and commercial operations, tourism, ...). In this context, SOCIB (the Balearic Islands Coastal Observing and Forecasting System, www.socib.es) has developed an operational ocean forecasting system in the Western Mediterranean Sea (WMOP). WMOP uses a regional configuration of the Regional Ocean Modelling System (ROMS, Shchepetkin and McWilliams, 2005) nested in the larger scale Mediterranean Forecasting System (MFS) with a spatial resolution of 1.5-2km. WMOP aims at reproducing both the basin-scale ocean circulation and the mesoscale variability which is known to play a crucial role due to its strong interaction with the large scale circulation in this region.

An operational validation system has been developed to systematically assess the model outputs at daily, monthly and seasonal time scales. Multi-platform observations are used for this validation, including satellite products (Sea Surface Temperature, Sea Level Anomaly), in situ measurements (from gliders, Argo floats, drifters and fixed moorings) and High-Frequency radar data. The validation procedures allow to monitor and certify the general realism of the daily production of the ocean forecasting system before its distribution to users. Additionally, different indicators (Sea Surface Temperature and Salinity, Eddy Kinetic Energy, Mixed Layer Depth, Heat Content, transports in key sections) are computed every day both at the basin-scale and in several sub-regions (Alboran Sea, Balearic Sea, Gulf of Lion). The daily forecasts, validation diagnostics and indicators from the operational model over the last months are available at www.socib.es.